

Claims 1, 2 and 7 are drawn to optical storage media on which information is multiplexingly stored in the form of at least one light intensity hologram and at least one polarization hologram. Applicants define these holograms in claim 1 as "the at least one light intensity hologram being generated by a signal beam and a reference beam with a polarization direction of the signal beam in parallel with a polarization direction of the reference beam, and the at least one polarization hologram produced by the signal beam and the reference beam with the polarization direction of the signal beam perpendicular to the polarization direction of the reference beam."

The Office Action "adopts the position that to be analogous to the embodiment of figure 7, the SLM (29) of figure 6 shown in the process of use must be a polarization SLM and the embodiment of figure 6 renders the claims anticipated."

As discussed in the April 29 interview, one of the main issues is whether the figures 6 and/or 7 of JP-A 03-075789 teach or suggest a polarization spatial light-modulating element used to form light intensity holograms and polarization holograms. Specifically, the Examiner expressed uncertainty as to whether elements 32 (a polarizing beam splitter) and 29' (an optical-input-type spatial light-modulating element) in figure 7 function so that two different polarization states reach the recording medium, with the spatial light-modulating element shifting the polarization in an imagewise manner, or if one polarization state only reaches the recording medium.

It is respectfully submitted that JP-A 03-075789 does not disclose using a polarization spatial light-modulating element as elements 32 and 29' in figure 7 to store at least one light intensity hologram and at least one polarization hologram as claimed in claims 1, 2 and 7 of this application. It is clear from the translation of the reference, provided by the Patent Office, that only one polarization state reaches lens 26 and is written on the recording medium. See JP-A 03-075789, page 19, lines 10-16.

In addition, JP-A 03-075789 does not teach or suggest an optical storage medium comprising a polarization-sensitive member having a photo-induced birefringence property.

For at least these reasons, JP-A 03-075789 does not disclose, teach or suggest every element recited in claim. Therefore JP-A 03-075789 cannot anticipate claims 1, 2 and 7. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

**II. Rejections Under §103(a)**

**A. Claims 1, 2 and 7**

The Office Action rejects claims 1, 2 and 7 under 35 U.S.C. §103(a) over JP-A 03-075789, in view of JP-A 03-149660 and Ono (JP 09-269719). Applicants respectfully traverse this rejection.

Applicants submit that neither JP-A 03-075789 nor JP-A 03-149660 disclose or suggest optical storage media comprising a polarization-sensitive member having a photo-induced birefringence property. Applicants further submit that Ono cannot properly be combined with these references because Ono is not available as citable prior art against the present application.

As discussed above, JP-A 03-075789 does not disclose, teach or suggest the invention of claims 1, 2 and 7. Thus, JP-A 03-075789 alone does not render claims 1, 2 and 7 obvious. Further, JP-A 03-149660 does not remedy the shortcomings of JP-A 03-075789.

The Office Action asserts that it would have been obvious to modify the process of JP-A 03-075789 to record images using a polarization spatial light-modulating element as taught, according to the Office Action, by JP-A 03-149660. Applicants respectfully disagree.

JP-A 03-149660 discloses retrieving data stored by holographic means in an optical memory. The present application is directed to different subject matter than JP-A 03-149660, i.e., to optical storage media as opposed to data retrieval. The methods of retrieving data taught by JP-A 03-149660 do not disclose or suggest the optical storage media itself. JP-A 03-149660 does not teach optical storage media on which data is stored in the form of at

least one light intensity hologram and at least one polarization hologram and on which a polarization spatial light-modulating element is used to form light intensity holograms, by having signal beam polarization parallel to the polarization of the reference beam, and polarization holograms, by having signal beam polarization perpendicular to the polarization of the reference beam. Therefore, JP-A 03-149660 does not remedy the shortcomings of JP-A 03-075789.

Ono is not available as prior art with respect to the present application. Ono was published on October 14, 1997, less than one year before April 8, 1998, the filing date of U.S. Patent Application No. 09/056,798 to which the present application claims priority. In addition, this application and its parent application claim priority to Japanese Patent Applications 10-032834 and 09-094194, filed February 16, 1998 and April 11, 1997, respectively.

For at least the above reasons, it is respectfully submitted that claims 1, 2 and 7 are patentable over JP-A 03-075789, in view of JP-A 03-149660 and Ono. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

**B. Claims 1, 2 and 4**

The Office Action rejects claims 1, 2 and 4 under 35 U.S.C. §103(a) over JP-A 03-075789, in view of JP-A 03-149660, Ono and T. Todorov, et al., Polarization Holography.2: Polarization Holographic Gratings In Photoanisotropic Materials With And Without Intrinsic Birefringence, 23(24) Applied Optics, 4588 (1984) ("Todorov"). Applicants respectfully traverse this rejection.

For the reasons discussed above, it is respectfully submitted that JP-A 03-075789, in view of JP-A 03-149660 does not render the invention of claims 1, 2 and 4 obvious, and Ono is not available as prior art. Todorov does not remedy the shortcomings of these references.

Todorov teaches polarization holographic gratings in photoanisotropic materials with and without intrinsic birefringence. Todorov does not teach or suggest the use of a

polarization-sensitive member having a photo-induced birefringence. Thus, Todorov does not teach or suggest the optical recording media of claims 1, 2 and 4. Todorov does not provide the impetus to combine this reference with JP-A 03-075789 and JP-A 03-149660.

For at least the above reasons, claims 1, 2 and 4 are patentable over JP-A 03-075789, in view of JP-A 03-149660, Ono and Todorov. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

**C. Claims 1, 2, 4 and 7**

The Office Action rejects claims 1, 2, 4 and 7 under 35 U.S.C. §103(a) over JP-A 03-075789, in view of JP-A 03-149660, Ono and U.S. Pat. No. 5,384,221 to Savant et al. ("Savant '221"). Applicants respectfully traverse this rejection.

For the reasons discussed above, it is respectfully submitted that JP-A 03-075789, in view of JP-A 03-149660 does not render the invention of claims 1, 2, 4 and 7 obvious, and Ono is not available as prior art. Savant '221 does not remedy the shortcomings of these references.

When two reference beams of orthogonal polarization and two object beams of orthogonal polarization are used to simultaneously record holograms, four holograms are formed as all the beams are able to interfere, although two interfere in the light intensity regime and two interfere only in the polarization regime. The Examiner acknowledged during the October 21, 2002 interview that the same beam is not used in forming the holograms, as disclosed in the references of record. Therefore, Savant '221 does not teach or suggest that the at least one light intensity hologram and the at least one polarization hologram are produced by a same reference beam and a signal beam that is polarization modulated by a spatial light modulator to simultaneously record the at least one light intensity hologram and the at least one polarization hologram as gratings, as recited in claim 1. Therefore, Savant '221 does not remedy the shortcomings of JP-A 03-075789 and JP-A 03-149660.

Savant '221 also does not teach or suggest the use of a polarization-sensitive member having a photo-induced birefringence. Thus, Savant '221 does not teach or suggest the optical recording media recited in claims 1, 2, 4 and 7. Further, Savant '221 does not provide the impetus to combine this reference with JP-A 03-075789 and JP-A 03-149660.

For at least the above reasons, it is respectfully submitted that claims 1, 2, 4 and 7 are patentable over JP-A 03-075789, in view of JP-A 03-149660, Ono and Savant '221. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

**D. Claims 1-3, 5 and 7**

The Office Action rejects claims 1-3, 5 and 7 under 35 U.S.C. §103(a) over JP-A 03-075789, in view of JP-A 03-149660, Ono and U.S. Pat. No. 5,173,381 to Natansohn et al. ("Natansohn '381"). Applicants respectfully traverse this rejection.

For the reasons discussed above, JP-A 03-075789, in view of JP-A 03-149660 does not render the invention of claims 1-3, 5 and 7 obvious, and Ono is not available as prior art. Natansohn '381 does not remedy the shortcomings of these references.

As discussed above, the Examiner has acknowledged that the same beam is not used in forming the holograms, as disclosed in the references of record. Therefore, Natansohn '381 does not teach or suggest that the at least one light intensity hologram and the at least one polarization hologram are produced by a same reference beam and a signal beam that is polarization modulated by a spatial light modulator to simultaneously record the at least one light intensity hologram and the at least one polarization hologram as gratings, as recited in claim 1. Therefore, Natansohn '381 does not remedy the shortcomings of JP-A 03-075789 and JP-A 03-149660.

For at least the above reasons, it is respectfully submitted that claims 1-3, 5 and 7 are patentable over JP-A 03-075789, in view of JP-A 03-149660, Ono and Natansohn '381. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

**E. Claims 1-3 and 6-7**

The Office Action rejects claims 1-3 and 6-7 under 35 U.S.C. §103(a) over JP-A 03-075789, in view of JP-A 03-149660, Ono and U.S. Pat. No. 5,024,784 to Eich et al. ("Eich '784"). Applicants respectfully traverse this rejection.

For the reasons discussed above, JP-A 03-075789, in view of JP-A 03-149660 does not render the invention of claims 1-3 and 6-7 obvious, and Ono is not available as prior art. Eich '784 does not remedy the shortcomings of these references.

As discussed above, the Examiner has acknowledged that the same beam is not used in forming the holograms, as disclosed in the references of record. Therefore, Eich '784 does not teach or suggest that the at least one light intensity hologram and the at least one polarization hologram are produced by a same reference beam and a signal beam that is polarization modulated by a spatial light modulator to simultaneously record the at least one light intensity hologram and the at least one polarization hologram as gratings, as recited in claim 1. Therefore, Eich '784 does not remedy the shortcomings of JP-A 03-075789 and JP-A 03-149660.

For at least the above reasons, it is respectfully submitted that claims 1-3 and 6-7 are patentable over JP-A 03-075789, in view of JP-A 03-149660, Ono and Eich '784. Accordingly, reconsideration and withdrawal of the rejection are respectfully requested.

**III. Double Patenting Rejection**

The Office Action rejects claims 1-7 under judicially created doctrine of double patenting over claims 1-7 are rejected for alleged double patenting over claims 1-47 of U.S. Patent No. 6,452,890. Applicants respectfully traverse this rejection.

Claims 1-7 of the present application as originally filed are identical to original claims 1-7 of U.S. Application Serial No. 09/056,798, which issued as U.S. Patent No. 6,452,890. That application was subject to a restriction requirement. Of original claims 1-7 of the '798

application, at least claims 2 and 7 were withdrawn as to a non-elected species. Accordingly, the double patenting rejection is improper, at least with respect to claims 2 and 7.


Further, Applicants respectfully submit that the time for responding to this rejection has not matured. Applicants will respond further to this rejection and, if necessary, file a Terminal Disclaimer when the time for responding to this rejection is matured.

**IV. Conclusion**

In view of the foregoing remarks, Applicants submit that this application is in condition for allowance. Favorable reconsideration and prompt allowance of claims 1-7 are earnestly solicited.

Should the Examiner believe that anything further would be desirable in order to place this application in better condition for allowance, the Examiner is invited to contact Applicants' undersigned representative at the telephone number set forth below.

Respectfully submitted,

  
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Date: May 9, 2003

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